CLAIMS

1. A glass for laser processing that is processed through laser beam irradiation,

wherein the glass for laser processing has a composition that satisfies the following relationships:

$40 \leq M[NFO] \leq 70$;

$5 \leq (M[TiO_2]) \leq 45$; and

$5 \leq M[NMO] \leq 40$,

where M[NFO], $M[TiO_2]$, and M[NMO] denote the content by percentage of network forming oxides (mol%), that of TiO_2 (mol%), and that of network modifying oxides (mol%), respectively.

2. The glass for laser processing according to claim 1, wherein the network forming oxides are at least one oxide selected from SiO_2 and B_2O_3, the network modifying oxides are at least one oxide selected from alkali metal oxides and alkaline earth metal oxides, and the composition further satisfies the following relationship:

$5 \leq (M[TiO_2] + M[Al_2O_3]) \leq 45$,

where $M[Al_2O_3]$ denotes the content by percentage of Al_2O_3 (mol%).

3. The glass for laser processing according to claim 2, wherein a value f_m defined by the following formula is 1.35 or lower:

$f_m = (\Sigma x_i C_i Z_i / (r_i + r_0)^2) / \Sigma x_i C_i$,

where x_i denotes a molar fraction for which oxides (i) containing cations (i) other than alkali metal ions and alkaline earth metal ions account in the composition; C_i indicates the number of the cations (i) included in composition formulae of the oxides (i); Z_i denotes valences of the cations (i); and r_i and r_0 indicate values expressing ion radii of the cations (i) and oxide ions by angstrom, respectively.

4. The glass for laser processing according to claim 2, wherein a value F_m defined by the following formula is 400 $kJ \cdot mol^{-1}$ or lower:

$F_m = \Sigma x_j C_j E_{dj} / \Sigma x_j C_j N_j$,

where x_j denotes a molar fraction for which oxides (j) other than alkali metal oxides and alkaline earth metal oxides account in the composition; C_j indicates the number of cations (j) included in composition formulae of the

oxides (j); E_{dj} denotes dissociation energy of the oxides (j) expressed with a composition ratio of the cations (j) being 1; and N_j indicates the number of oxide ions coordinated to the cations (j) in the oxides (j).

5. The glass for laser processing according to claim 4, satisfying a relationship of $(F_m/\alpha) \leq 0.13$ when the value F_m and an absorption coefficient α of the glass for laser processing are expressed by the same unit.

6. The glass for laser processing according to claim 2, wherein the glass for laser processing is composed essentially of SiO_2, TiO_2, and at least one oxide selected from the alkali metal oxides and alkaline earth metal oxides, and the number of Si-O-Ti bonds per SiO_4 unit is at least 0.4.

7. The glass for laser processing according to claim 2, wherein the glass for laser processing is composed essentially of SiO_2, TiO_2, and at least one oxide selected from the alkali metal oxides and alkaline earth metal oxides, and satisfies the following relationships:

$N_{BO}{}^I / \alpha \leq 11 \times 10^{-6}$ cm when $M_{Si}N_{NBO}{}^I - 2M_{Ti} > 0$; and

$N_{BO} / \alpha \leq 11 \times 10^{-6}$ cm when $M_{Si}N_{NBO}{}^I - 2M_{Ti} \leq 0$,

where M_{Si} and M_{Ti} denote molar fractions of Si and Ti contained in the glass for laser processing, respectively; $N_{BO}{}^I$ and $N_{NBO}{}^I$ indicate the number of bridging oxygen atoms and the number of non-bridging oxygen atoms, respectively, in a glass structure that is free from Ti; α denotes an absorption coefficient (unit: cm^{-1}) of the glass for laser processing; and N_{BO} indicates the number of oxygen atoms, per SiO_4 unit, that each still is cross-linking two Si atoms even after introduction of Ti.

8. A glass for laser processing that is processed through laser beam irradiation,

wherein the glass for laser processing has a composition that satisfies the following conditions:

$40 \leq M[SiO_2] \leq 60$;

$10 \leq M[Al_2O_3] \leq 20$;

$10 \leq M[TiO_2] \leq 20$; and

$10 \leq M[MgO] \leq 35$,

where $M[SiO_2]$, $M[Al_2O_3]$, $M[TiO_2]$, and M[MgO] denote the content by percentage of SiO_2 (mol%), that of Al_2O_3 (mol%), that of TiO_2 (mol%), and that

of MgO (mol%), respectively.